The Tool Service Station (TSS) is made up of several modules in order to maintain the cutting tool and to assure the quality control of the process and is used in the field of mechanical finishing with industrial robots which are equipped with a spindle drive.

All-in-One Station
The Tool Service Station includes hardware and software components. Hardware components are the Cleaning Module, FC Calibration Module, Tool Check Module, the Tool Service Station Standard Interface, the Adapter Plate and the Universal Stand. The Human Machine Interface (HMI) is the included software component.

Modular Solution
Due to the standardized design of the different modules the Tool Service Station can be assembled individually and therefore assure the ideal solution for every application.

Following modules are available:
- Tool Check Module
- Cleaning Module
- FC Calibration (TCP and WObj measurement)

The Tool Check Module is used to inspect the tool and guarantees, that following machining steps can be done with an undamaged tool. The Cleaning Module cleans the tool in order to remove metal residues left from machining. The option FC Calibration is used to measure the tool center points and workobjects and ensures a high accuracy of the tooldata and workobjectdata.

Electrical Integration
The electrical integration in the system is done over the Tool Service Station Standard Interface, which is an electrical standard interface and a plug & play solution. For the software related parameterization of the different modules of the Tool Service Station, a licensed Human Machine Interface (HMI) is used.

Human Machine Interface (HMI)
The HMI supports the technical staff on site during commissioning of the Tool Service Station. With this supporting software positions can be taught and furthermore the operation system of the different stations is simplified for the operators. By using this software, programming of RAPID-Modules for the individual functions of the Tool Service Station is no longer necessary. These functions can be integrated later on during productions through the use of predefined procedures.
# Tool Service Station (TSS)

## Technical Requirements

<table>
<thead>
<tr>
<th>ABB Robot Force Control function package</th>
<th>IRC5 Controller with following options:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>617-1 FlexPendant Interface</td>
</tr>
<tr>
<td></td>
<td>709-x DeviceNet</td>
</tr>
<tr>
<td></td>
<td>RobotWare 5.11 or higher</td>
</tr>
<tr>
<td></td>
<td>Spindle drive with manual or automatic tool changing system</td>
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</tbody>
</table>

## Available Modules

The Tool Service Station is made up of several modules for the maintenance of the cutting tool and quality control of the process.

## Mechanical Interface

A mounting specific to the individual user, wall-mounting or mounting on the Universal Stand is made possible through the use of the standard mechanical interface. The Adapter Plate of the Tool Service Station has a standardized interface for the mounting of the whole station and additionally for every single module. Following illustration shows the mechanical interface of the Adapter Plate.

### Note

- **A**: Adapter Plate
- **B**: Cleaning Module
- **C**: Tool Check Module
- **D**: FC Calibration - Wobj
- **E**: FC Calibration - TCP
- **F**: Tool Buffer Module

## Types

The Tool Buffer Module is available in four different designs. These Modules are offered for following collet types: ISO20, ISO30, ISO40, and HSK-F63.

![Tool Service Station Diagram](image)

### Human Machine Interface (HMI)

![Human Machine Interface Image](image)

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